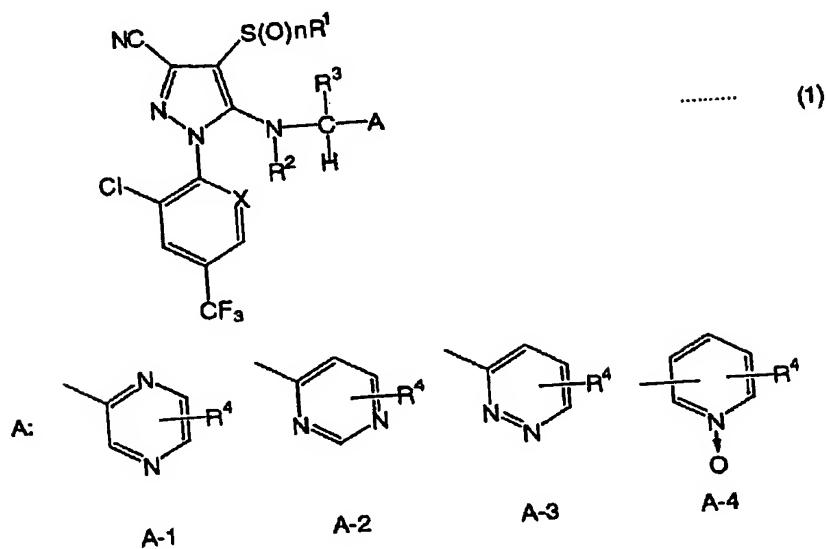


Claims

1. A 1-aryl-3-cyano-5-heteroarylalkylaminopyrazole derivative represented by the  
following general formula (1):  
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(wherein X represents N or C-halogen, R<sup>1</sup> represents an alkyl group, an alkenyl group, an alkynyl group, or a haloalkyl group, R<sup>2</sup> represents hydrogen atom, an alkyl group, or an acyl group, R<sup>3</sup> represents hydrogen atom or an alkyl group, A represents any one of the groups represented by above A-1 to A-4, R<sup>4</sup> represents hydrogen atom, an alkyl group, or a halogen atom, and n represents 0, 1, or 2,  
10 provided that R<sup>1</sup> is a haloalkyl group except a perhaloalkyl  
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group when A is A-1 and n is 0, and that n is not 0 when A is A-4).

2. The 1-aryl-3-cyano-5-heteroarylalkylaminopyrazole derivative according to claim 1, wherein A is A-1 and R<sup>4</sup> represents hydrogen atom or an alkyl group.

3. The 1-aryl-3-cyano-5-heteroarylalkylaminopyrazole derivative according to claim 1 or 2, wherein R<sup>1</sup> is an alkyl group having 1 to 4 carbon atoms or a haloalkyl group having 1 to 4 carbon atoms.

4. The 1-aryl-3-cyano-5-heteroarylalkylaminopyrazole derivative according to any one of claims 1 to 3, wherein R<sup>1</sup> is an haloalkyl group having 1 to 2 carbon atoms.

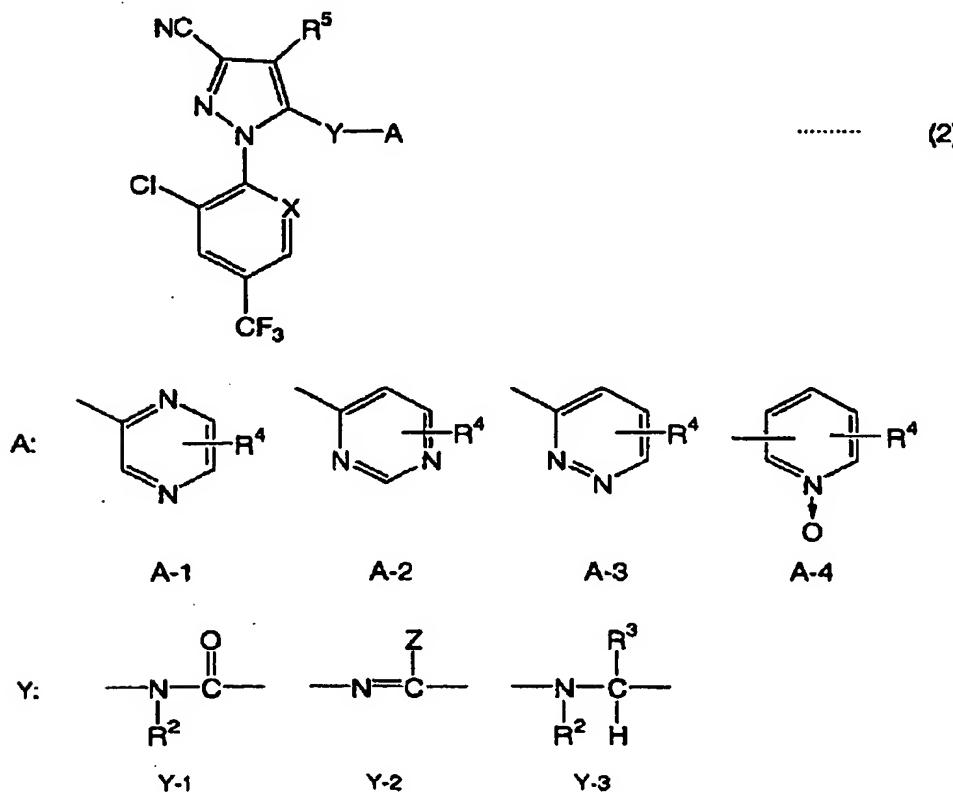
5. 1-(2,6-Dichloro-4-trifluoromethylphenyl)-4-fluoromethylthio-5-(pyrazin-2-ylmethylamino)pyrazole-3-carbonitrile and 1-(2,6-dichloro-4-trifluoromethylphenyl)-4-trifluoromethylsulfinyl-5-(pyrazin-2-ylmethylamino)pyrazole-3-carbonitrile.

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6. A pest control agent containing the 1-aryl-3-cyano-5-heteroarylalkylaminopyrazole derivative according to any one of claims 1 to 5 as an active ingredient.

5 7. An insecticide containing the 1-aryl-3-cyano-5-heteroarylalkylaminopyrazole derivative according to any one of claims 1 to 5 as an active ingredient.

8. A pyrazole derivative represented by the following general formula (2) :



(wherein X, R<sup>2</sup>, R<sup>3</sup>, and R<sup>4</sup> have the same meanings as in the general formula (1), and R<sup>5</sup> represents hydrogen atom,

thiocyanato group, dithio group which combines two pyrazole rings, or mercapto group. Z represents a halogen atom).

9. A process for producing a pyrazole derivative  
5 of the general formula (1), which comprises treating a pyrazole derivative of the general formula (2) (wherein R<sup>5</sup> is hydrogen atom and Y is Y-3) with R<sup>1</sup>S(O)<sub>n</sub>X<sup>1</sup> (R<sup>1</sup> has the same meaning as in the general formula (1), n is 0 or 1, and X<sup>1</sup> is chlorine atom or bromine atom).

10. A process for producing a pyrazole derivative  
of the general formula (1) (wherein n is 1 or 2), which comprises oxidizing a sulfur atom of a pyrazole derivative of the general formula (1) (wherein n is 0).

11. A process for producing a pyrazole derivative  
of the general formula (1) (wherein n is 0), which comprises treating a pyrazole derivative of the general formula (2) (wherein R<sup>5</sup> is thiocyanato group and Y is Y-3) with R<sup>1</sup>-X<sup>2</sup> (wherein R<sup>1</sup> has the same meaning as in the general formula (1) and X<sup>2</sup> represents a halogen atom or trimethylsilyl group).

12. A process for producing a pyrazole derivative  
25 of the general formula (1) (wherein n is 0), which comprises treating a pyrazole derivative of the general

formula (2) (wh rein R<sup>5</sup> is mercapto group and Y is Y-3)  
with R<sup>1</sup>-X<sup>3</sup> (wherein R<sup>1</sup> has the same meaning as in the  
general formula (1) and X<sup>3</sup> represents a halogen atom).

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13. A process for producing a pyrazole derivative  
of the general formula (1) (wherein n is 0 and R<sup>3</sup> is  
hydrogen atom), which comprises treating a pyrazole  
derivative of the general formula (2) (wherein R<sup>5</sup> is dithio  
group which combines two pyrazole rings and Y is Y-3) with  
R<sup>1</sup>-X<sup>4</sup> (wherein R<sup>1</sup> has the same meaning as in the general  
formula (1) and X<sup>4</sup> represents a halogen atom or SO<sub>2</sub>M (M  
represents an alkali metal)).

14. A process for producing a pyrazole derivative  
of the general formula (1) (wherein R<sup>1</sup> has one or more  
fluorine atoms), which comprises treating a pyrazole  
derivative of the general formula (1) (wherein R<sup>1</sup> is an  
alkyl group containing one or more chlorine atom or bromine  
atom) with a fluorinating agent selected from the group  
consisting of hydrogen fluoride, a mixture of hydrogen  
fluoride and an amine, and a metal fluoride.

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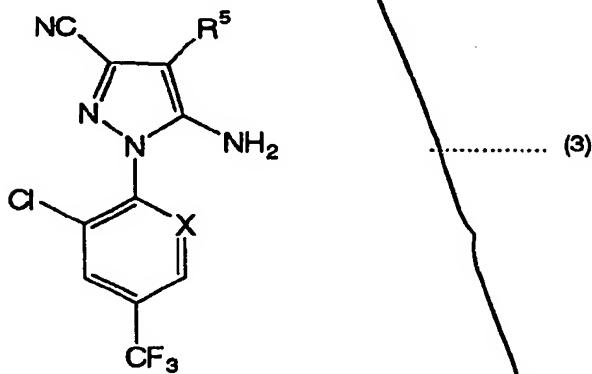
15. A process for producing the pyrazole  
derivative according to any one of claims 9 to 14, wherein  
R<sup>1</sup> is a haloalkyl group having 1 to 2 carbon atoms.

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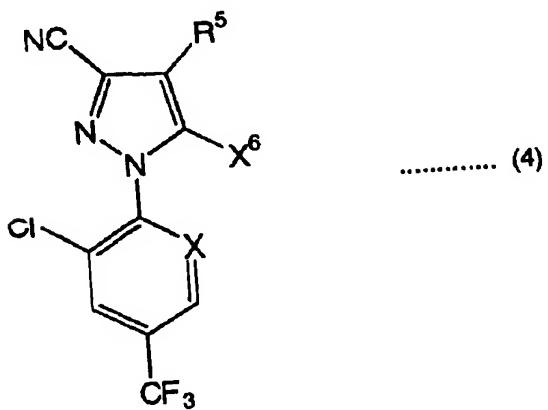
16. A process for producing a pyrazole derivative  
of the general formula (2) (wherein Y is Y-3 and R<sup>2</sup> is  
hydrogen atom), which comprises treating a pyrazole  
derivative of the following general formula (3) (wherein X  
5 has the same meaning as in the general formula (1)) with a  
nitrogen-containing six-membered heterocyclic compound  
represented by A-CH(-R<sup>3</sup>)-X<sup>5</sup> (wherein A has the same meaning  
as in the general formula (1) and X<sup>5</sup> represents a halogen  
atom, a lower alkylsulfonyloxy group, or an arylsulfonyloxy  
group).

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17. A process for producing a pyrazole derivative  
15 of the general formula (2) (wherein Y is Y-3 and R<sup>2</sup> is  
hydrogen atom), which comprises treating a pyrazole  
derivative of the following general formula (4) (wherein X  
has the same meaning as in the formula (1), R<sup>5</sup> has the same  
meaning as in the formula (2), and X<sup>6</sup> represents a halogen  
20 atom, a lower alkylsulfonyloxy group, or an arylsulfonyloxy

group) with a nitrogen-containing six-membered heterocyclic compound represented by  $A-CH(-R^3)-NH_2$  (wherein A and  $R^3$  have the same meanings as in the general formula (1)).



18. A process for producing a pyrazole derivative of the general formula (2) (wherein Y is Y-1 and R<sup>2</sup> is hydrogen atom), which comprises treating a pyrazole derivative of the general formula (3) with a nitrogen-containing six-membered heterocyclic compound represented by A-C(=O)X' (wherein A has the same meaning as in the general formula (1) and X' represents hydroxyl group, an alkoxy group having 1 to 6 carbon atoms, or a halogen atom).

19. A process for producing a haloimide compound of the general formula (2) (wherein Y is Y-2 and Z is chlorine atom or bromine atom), which comprises treating an amide compound of the general formula (2) (wherein Y is

**Y-1 and R<sup>2</sup> is hydrogen atom) with phosphorus pentachloride, phosphorus pentabromide, phosphorus oxychloride, phosphorus oxybromide, thionyl chloride, or thionyl bromide.**

- 5           **20. A process for producing a pyrazole derivative of the general formula (2) (wherein Y is Y-3 and R<sup>3</sup> is hydrogen atom), which comprises reducing an amide compound or a haloimide compound represented by the general formula (2) (wherein Y is Y-1 or Y-2).**

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